CLAIMS

1. A transmission system for a vehicle, the transmission system including an input shaft connected to a differential mechanism, which has two output shafts, the two output shafts carrying first and second coaxially mounted sun wheels, respectively, of an epicyclic gear system which mesh with first and second sets of planet wheels, respectively, which mesh with first and second annulus wheels, respectively, the gear ratios of the first sun wheel with the first set of planet wheels and the second sun wheel with the second set of planet wheels being different, each planet wheel being mounted to rotate independently about a respective planet shaft, the planet shafts being connected to a common carrier which is rotatably mounted coaxially with the first and second sun wheels, the first and second annulus wheels being connected together, the carrier being connected to a selectively operable speed changing means arranged to increase or decrease the speed of rotation of the carrier about its axis, the transmission system further including at least one sensor arranged to produce a signal indicative of an operating parameter of the vehicle or its engine and a controller connected to the sensor and to the speed changing means and arranged to operate the speed changing means in response to the said signal.

2. A transmission system as claimed in Claim 1 in which each first planet wheel is associated with a respective second planet wheel to constitute a set of planet wheels, each set of planet wheels being independently rotatably carried by a respective common planet shaft.

3. A transmission system as claimed in Claim 1 or 2 in which the speed changing means is an electric motor.

4. A transmission system as claimed in Claim 1 or 2 in which the speed changing means is a first brake.

5. A transmission system as claimed in Claim 4 in which the epicyclic gear system includes a third sun wheel, which is mounted coaxially with the first and second sun wheels and is in mesh with a third set of planet wheels, the third set of planet wheels being in mesh with a third annulus wheel, which is connected to the first and second annulus wheels, the gear ratio of the third sun wheel with the third set of planet wheels being different to that of the second and first sun wheels with the second and first sets of planet wheels, respectively, each third planet wheel being mounted to rotate independently on a respective planet shaft, the third sun wheel being connected to a second selectively operable brake.

6. A transmission system as claimed in Claim 5 in which each third planet wheel is associated with a respective pair of first and second planet wheels to form a set of planet wheels, each set of planet wheels being mounted to rotate independently on a respective planet shaft.

7. A transmission system as claimed in Claim 5 or 6 in which the first and second brakes include annular brake discs which lie substantially in a single plane.